REMARKS/ARGUMENTS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 25, 26, 29-32, 64, 65 and 67-71 are presently pending in this application.

In the Office Action dated December 27, 2007, Claims 25, 26, 29, 64, 69 and 71 were rejected under 35 U.S.C. §103(a) as being unpatentable over Inagaki et al. (U.S. Patent 5,837,155) in view of Chuang (US6,045,866) and Wroe et al. (U.S. Patent 4,994,903); Claims 30-32, 67, 68 and 70 were rejected under 35 U.S.C. §103(a) as being unpatentable over Inagaki et al., Chuang and Wroe et al., and further in view of Brandli et al. (U.S. Patent 5,227,012); and Claim 65 was rejected under 35 U.S.C. §103(a) as being unpatentable over Inagaki et al., Chuang and Wroe et al., and further in view of Misfeldt (U.S. Patent 3,972,755).

Before addressing the rejections based on the above cited references, a brief review of Claim 25 is believed to be helpful. Claim 25 is directed to a multilayer printed circuit board and recites, *inter alia*: "a first resin insulating layer formed over at least one of the first and second surfaces of the resin substrate, *the first resin insulating layer comprising a thermosetting polyolefin resin*; a lower metal layer formed on the first resin insulating layer; and a conductor circuit comprising a metal and formed on the lower metal layer, wherein said lower metal layer has a same pattern as said conductor circuit and comprises at least one metal selected from the group consisting of metals of the 4th through 7th periods in Group 4A through Group lB of the long-form periodic table of the elements, Al, and Sn, excluding Cu, and *said first resin insulating layer has a flat and level surface such that the lower metal layer formed on said flat and level surface of said first resin insulating layer is made sufficiently flat and level and said conductor circuit formed on said lower metal layer is made sufficiently flat to provide no signal conduction delay for a high frequency signal.*"

By providing such an insulating layer, the lower metal layer with good adhesion stays on the insulating layer *without roughening its surface for adhesion* and *does not inherit the roughness of the insulating layer*, thereby allowing the conductor circuit to be secured on the insulating layer while being free of any roughened portions. Consequently, the conductor circuit can transmit a high frequency signal without transmission delay. Furthermore, the thermosetting polyolefin does not soften in a hot environment or due to heat generated during the use of a printed board, for example, by an IC chip, and it keeps the insulating layer flat. On the contrary, a thermoplastic polyolefin can be softened by heat generated during the use or in a hot environment and can compromise the flatness of an insulating layer surface.

The Office Action states that Claim 25 is obvious over Inagaki et al., in view of Chuang and Wroe et al. because although "Inagaki-Chuang fails to disclose a resin-insulating layer comprising thermosetting polyolefin resin and a conductor circuit comprising Al," "it would have been obvious ... to incorporate an insulating layer made of polyolefin with the device of Inagaki-Chuang, since the polyolefin would provide reliable electrical insulating layer for the substrate while attached to an Al conductor circuit as taught by Wroe." Applicants respectfully traverse as follows.

First, the Office Action states that in Inagaki et al., "[e]ach of the first resin insulating layers 4 has a flat and level surface." On the contrary, Applicants respectfully submit that Inagaki et al. is believed to simply show a copper film conductor laminated on an insulating resin layer, and *the copper film conductor is roughened such that its roughened surface intimately laminates to the insulating resin layer when they are heated and pressed with a roller*. In fact, Inagaki et al. states as follows: "the process of production is described above as using the copper foils 5 which have *the working surfaces thereof coarsened preparatorily*. The use of the copper foils of this kind may well be called preferable in the sense that the layers of the insulating resin composition which have been softened by the heat of the heated

pressure rollers during the course of lamination are enabled to acquire *exalted adhesive force by following the undulating coarsened working surfaces of the copper foils*. Copper foils which have an adhesive agent applied thereto in advance may be used instead. It is particularly *advantageous to use copper foils that have the adhesive agent applied in advance to the coarsened working surfaces thereof. In this case, the layers of the insulating resin composition acquire still higher adhesive strength.* It is appropriate in this case to use an epoxy resin-based adhesive agent. *Particularly, when the insulating resin composition of the present invention is used as the adhesive agent to be applied to the coarsened working surfaces of the copper foils, the copper foils thus coated with the resin composition exhibit higher adhesive force than the copper foils which do not use the resin composition for coating the coarsened working surfaces thereof*"[1] (emphasis added in italic). Inagaki et al. also states that "[a]bove and below the substrate 11, copper foil rolls 13 each having the copper foil 5, 5 to 10 μm in working surface coarseness (amount of undulation of the coarsened surface of copper foil) ..."[2] and that "[t]he softened layers of the insulating resin composition 4 acquire exalted fastness of adhesion by *following the undulating coarsened working surfaces of the copper foils 5*" (emphasis added in italic)[3] Therefore, the structure recited in Claim 25 is clearly distinguishable from Inagaki et al., and furthermore, the Inagaki et al. device is believed to teach away from the structure recited in Claim 25.

The Office Action further states that "Wroe discloses a resin-insulating layer comprising a thermosetting polyolefin that can be substituted for an epoxy resin and a conductor circuit that can be substituted for copper." It is, however, respectfully submitted that Wroe et al. simply provides a broad list of organic materials including epoxies, acetal resins, polyimides, polyamides, polyimide-amides, polyesters, polyolefins, tetrafluorethylene,

[1] Inagaki et al., column 12, lines 15-37.
[2] Id., column 11, lines 12-16.
[3] Id., column 11, lines 40-54.

and acrylonitrile butadiene styrene copolymers and a list of equally acceptable metals including copper, aluminum copper-clad aluminum and the like. Wroe et al. does not even describe whether "polyolefins" are thermosetting or thermoplastic, and such indiscriminate listings of materials do not provide any guidance or suggestions in selecting one material over the others. Also, as discussed in the previous response, Wroe et al. simply shows a heat sink 30 which has an Invar portion and a Cu/Al portion attached to a substrate 12, and moreover, according to Wroe et al., circuit paths 14 are merely "a thin layer 26 of a metal such as copper, aluminum or copper-clad aluminum ...." As such, it is still believed that the Wroe et al. device is also believed to teach away from the structure recited in Claim 25. Hence, the structure recited in Claim 25 is clearly distinguishable from Wroe et al.

The Office Action also states that "[i]t is well known in the semiconductor industry to have a metal layer to have a smooth surface rather than a coarse surface as evident by Chuang." It is respectfully submitted that the lack of Chuang's description of its resin insulating layer and based on the foregoing discussions of Inagaki et al. and Wroe et al., even assuming *arguendo* that Chuang's flat nickel plating layer is combined with Inagaki et al.'s copper film, a combination still does not result in the first resin insulating layer as recited in Claim 25, *i.e.*, "a first resin insulating layer formed over at least one of the first and second surfaces of the resin substrate, the first resin insulating layer comprising a thermosetting polyolefin resin ..., wherein said lower metal layer has a same pattern as said conductor circuit ..., and said first resin insulating layer has a flat and level surface such that the lower metal layer formed on said flat and level surface of said first resin insulating layer is made sufficiently flat and level and said conductor circuit formed on said lower metal layer is made sufficiently flat to provide no signal conduction delay for a high frequency signal."

Likewise, the other references, Brandli et al. and Misfeldt, are not believed to teach or suggest the first insulating layer or the lower metal layer as recited in Claim 25 either, and the

structure recited in Claim 25 is believed to be clearly distinguishable from both Brandli et al. and Misfeldt.

For the foregoing reasons, none of Inagaki et al., Chuang, Wroe et al., Brandli et al. and Misfeldt Wroe et al. is believed to teach or suggest "a first resin insulating layer formed over at least one of the first and second surfaces of the resin substrate, the first resin insulating layer comprising a thermosetting polyolefin resin ..., wherein said lower metal layer has a same pattern as said conductor circuit ..., and said first resin insulating layer has a flat and level surface such that the lower metal layer formed on said flat and level surface of said first resin insulating layer is made sufficiently flat and level and said conductor circuit formed on said lower metal layer is made sufficiently flat to provide no signal conduction delay for a high frequency signal" as recited in amended Claim 25. And it is believed that the combination proposed in the office Action is a product of hindsight guided by Applicants' disclosure and lacks a proper motivation. Therefore, Applicants respectfully request that the outstanding obviousness rejection of Claim 25 based on Inagaki et al., Chuang and Wroe et al. be withdrawn.

For the foregoing reasons, Claim 25 is believed to be allowable. Furthermore, since Claims 26, 29-32, 64, 65 and 67-71 depend directly or indirectly from Claim 25, substantially the same arguments set forth above also apply to these dependent claims. Hence, Claims 26, 29-32, 64, 65 and 67-71 are believed to be allowable as well.

In view of the discussions presented above, Applicants respectfully submit that the present application is in condition for allowance, and an early action favorable to that effect is earnestly solicited.

Respectfully submitted,

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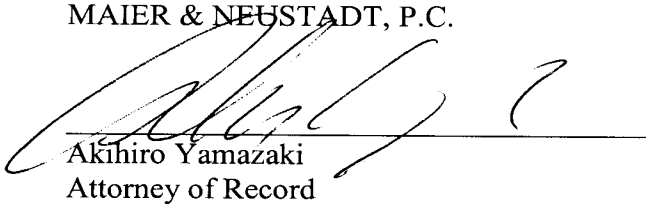

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